

2/951

FEDERAL - STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS  
for

Montana and Northern Wyoming  
Upper Missouri, Upper Columbia and  
Yellowstone Rivers

By  
Division of Irrigation, Soil Conservation Service  
United States Department of Agriculture  
and  
Montana Agricultural Experiment Station

In cooperation with the U. S. Forest Service, U. S. Geological Survey, National Park Service, U. S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and local organizations.

MONTANA STATE LIBRARY  
1515 E. 6th AVE.  
HELENA, MONTANA 59620

PLEASE  
DO NOT REMOVE

As of  
FEB. 1, 1951

Montana State Library



3 0864 1006 6103 5

FEDERAL-STATE COOPERATIVE  
SNOW SURVEY AND IRRIGATION WATER FORECASTS

FOR

MONTANA and NORTHERN WYOMING

Upper Missouri and Upper Columbia River  
Basins

Report Prepared  
by

Ashton R. Codd: Hydraulic Engineer  
Soil Conservation Service

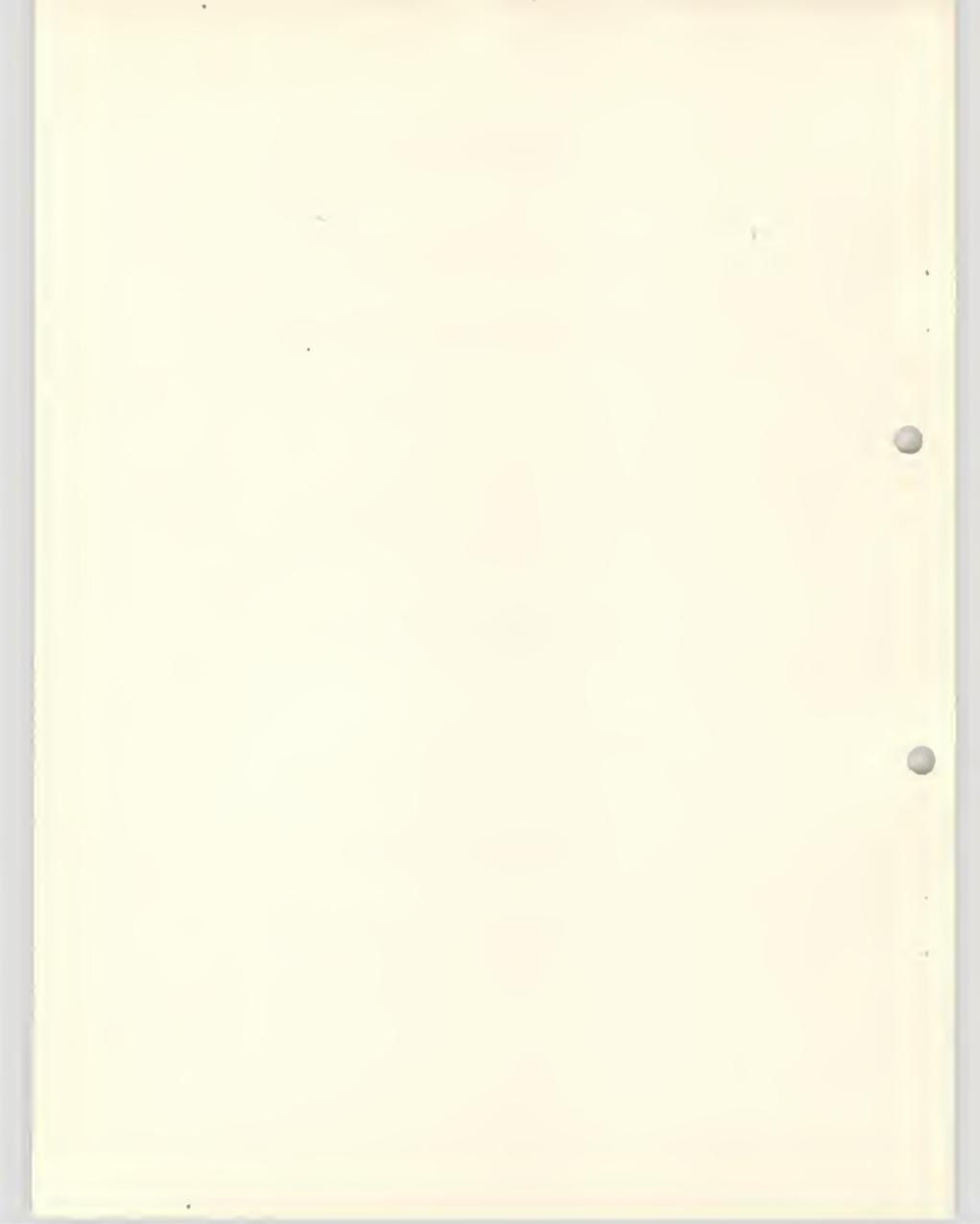
and

O. W. Monson: Head, Agricultural Engineering  
Montana State College

Division of Irrigation  
Soil Conservation Service

and

Montana Agricultural Experimental Station  
Bozeman, Montana



IRRIGATION WATER SUPPLY  
OUTLOOK FOR 1951  
AS OF FEBRUARY 1, 1951

Snow survey measurements made on or about the First of February at a few key stations over the Upper Missouri River Basin indicate that the snow pack is very close to average conditions. Comparative data indicates about 10% above average in the northwest to 2% below average in the southwest. The central portion of the basin is about average. Northern Wyoming Basins indicate a very similar condition, however, some of the older courses show a higher percentage of average than do the courses with a short period of record. In general there is less water in the mountains than for the last two years.

Valley precipitation station data close to the foot of the Rocky Mountains shows a slight plus deviation from the normal, while the stations farther east show a decided minus deviation. Valley precipitation stations in Northern Wyoming show a decided minus deviation, while the snow pack measured indicates a close-to-average condition. In some cases on the Wind River, as much as 50 to 70% above average water content is common. These opposite deviations will present a problem in forecasting at a later date, with the minus precipitation.

Stream flow conditions on the Upper Missouri have remained above the median during the season until the cold snap in late January when a decided drop was noticed.

Water storage throughout the state is in all cases better than last year and considerably above the average in most reservoirs.

Snow measurements made on the Upper Columbia Basin indicate a slightly above-average condition, judging from the stations that were measured. Precipitation stations in the area show a consistent positive deviation from the normal accumulated rainfall from October to date. Water in storage is considerably above last year and well above the 10-year average 1940-49.



## STORAGE IN RESERVOIRS OF MONTANA, FEBRUARY 1, 1951

## MISSOURI RIVER BASIN

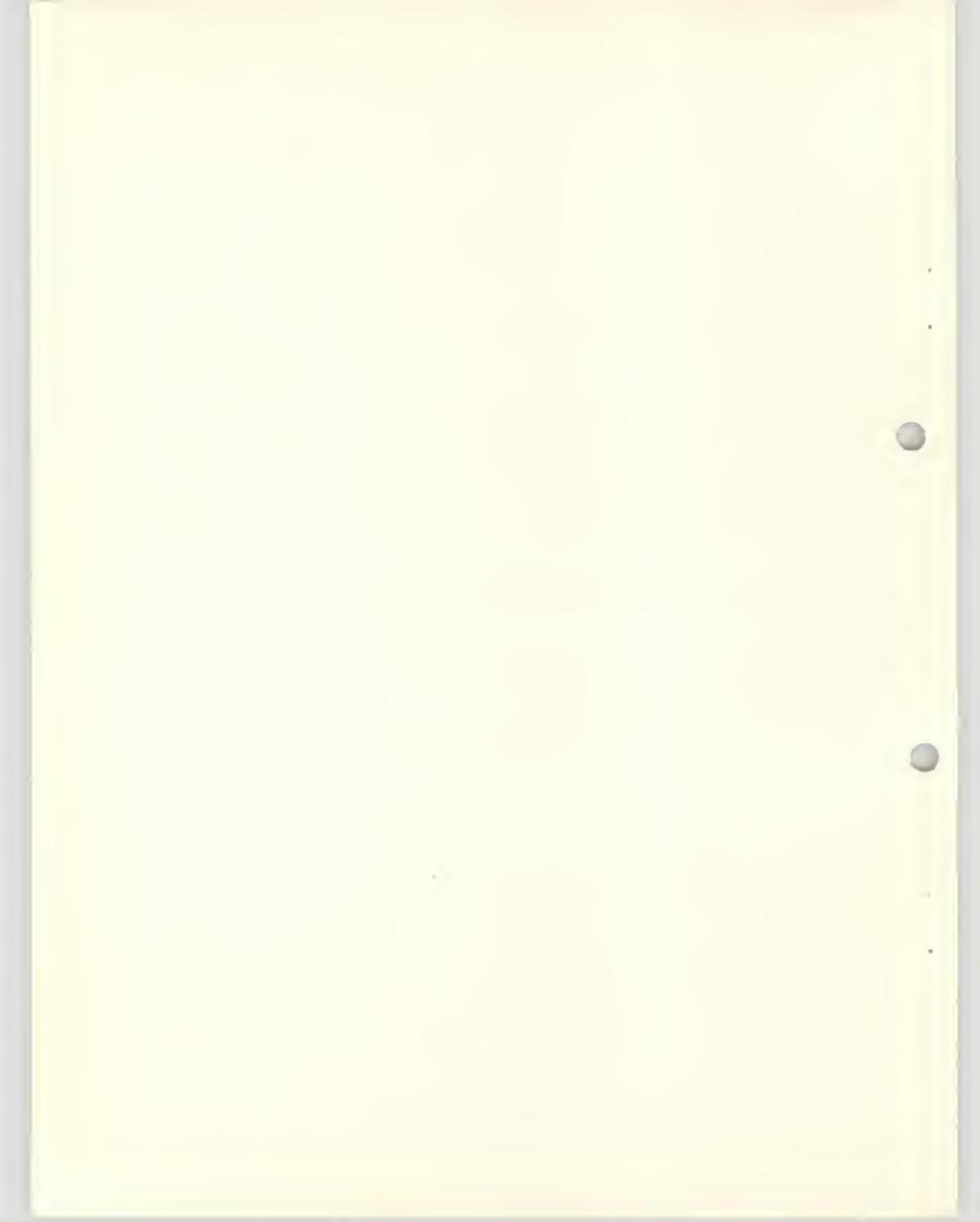
## Reservoir Volumes in 10,000's of Acre Feet

| RESERVOIR                                | Location on or<br>Diversion from      | Usable<br>Capacity | Contents                    |                             |                    |                   |
|--|---------------------------------------|--------------------|-----------------------------|-----------------------------|--------------------|-------------------|
|  |                                       |                    | This Year<br>Feb. 1<br>1951 | Last Year<br>Feb. 1<br>1950 | 10-Year<br>Average | Feb. 1<br>1940-49 |
| Lake Sewall                              | Missouri                              | 37.8               | 23.6                        | 29.2                        | 23.0               |                   |
| Hauser Lake                              | Missouri                              | 52.1               | 41.3                        | 35.2                        | 53.6               |                   |
| Ft. Peck Res.                            | Missouri                              | 19,000.0           | 12,440.0                    | 11,280.0                    | 9,296.0            |                   |
| Ruby Res.                                | Ruby                                  | 38.5               | -                           | -                           | -                  |                   |
| Harrison Lake                            | Willow Cr.                            | 17.8               | -                           | -                           | -                  |                   |
| Hebgen Res.                              | Madison River                         | 345.0              | 239.2                       | 207.6                       | 227.1              |                   |
| Madison Res.                             | Madison River                         | 41.0               | 30.8                        | 34.3                        | 34.4               |                   |
| Smith River Res.                         | Smith River                           | 10.7               | -                           | -                           | -                  |                   |
| Gibson Res.                              | N.Fk. Sun River                       | 105.0              | 75.4                        | 34.1                        | 56.5               |                   |
| Willow Creek                             | N.Fk. Sun-Willow Cr.                  | 32.3               | 23.1                        | 2.5                         | 12.6               |                   |
| Pishkun Res.                             | N.Fk. Sun River                       | 32.0               | 19.0                        | 19.2                        | 18.7               |                   |
| Lower Two Medicine L.                    | Two Medicine River                    | 14.0               | -                           | -                           | -                  |                   |
| Four Horns Res.                          | Badger Creek                          | 20.0               | -                           | 5.9                         | 7.9                |                   |
| Birch Creek Res.                         | Birch Creek                           | 30.0               | 24.9                        | 16.7                        | 21.0               |                   |
| Lake Francis Res.                        | Birch Creek                           | 112.0              | 93.8                        | 81.7                        | 75.9               |                   |
| Ackley Lake                              | Judith River                          | 5.8                | -                           | -                           | 4.3                |                   |
| Durand Res.                              | N.Fk. Musselshell                     | 7.0                | 5.4                         | -                           | -                  |                   |
| Dead Man Basin                           | Musselshell River                     | 52.5               | -                           | -                           | -                  |                   |
| Martinsdale Res.                         | So.Fk. Musselshell                    | 23.1               | 12.8                        | -                           | -                  |                   |
| Fresno Res.                              | Milk River                            | 127.2              | 68.6                        | 8.3                         | 44.4               |                   |
| Nelson Res.                              | Milk River                            | 66.8               | -                           | 5.4                         | -                  |                   |
| Mystic Lake                              | W.Rosebud Creek                       | 20.8               | 11.9                        | 10.9                        | 8.5                |                   |
| Cooney Res.                              | Red Lodge Creek                       | 27.5               | -                           | 10.7                        | 6.9                |                   |
| Tongue Res.                              | Tongue River                          | 73.9               | 8.1                         | 5.5                         | 7.9                |                   |
| Sherburne Lake Res.                      | Swiftcurrent Creek                    | 66.1               | 23.3                        | 33.6                        | 19.8               |                   |
| Lake Helena                              | Missouri River                        | 10.4               | 5.2                         | 3.0                         | -                  |                   |
| <u>YELLOWSTONE RIVER BASIN (Wyoming)</u> |                                       |                    |                             |                             |                    |                   |
| Buffalo Bill                             | Shoshone                              | 456.6              | 305.9                       | 203.9                       | 271.0              |                   |
| Sunshine                                 | Greybull                              | 52.0               | -                           | -                           | -                  |                   |
| Pilot Butte                              | Wind River                            | 30.1               | -                           | -                           | -                  |                   |
| Bill Lake                                | Wind River                            | 155.0              | -                           | -                           | -                  |                   |
| <u>COLUMBIA RIVER BASIN</u>              |                                       |                    |                             |                             |                    |                   |
| Georgetown Lake                          | Flint Creek                           | 31.0               | 25.2                        | 18.8                        | -                  |                   |
| E.Fk. Rock Cr. Res.                      | E.Fk. Rock Creek                      | 16.0               | -                           | -                           | -                  |                   |
| Nevada Creek Res.                        | Nevada Creek                          | 12.6               | -                           | -                           | -                  |                   |
| W.Fk. Bitterroot Res.                    | W.Fk. Bitterroot                      | 31.7               | 10.0                        | 0.6                         | 7.0                |                   |
| Como Lake                                | Rock Creek                            | 34.8               | -                           | -                           | -                  |                   |
| Flathead Lake (Sommers)                  | Flathead River                        | 1,791.0            | 1,107.0                     | 958.1                       | 559.5              |                   |
| Little Bitterroot                        | Little Bitterroot *                   | 37.1               | 33.3                        | 26.5                        | -                  |                   |
| Dry Fork Res.                            | Dry Fork Creek *                      | 6.7                | 39.6                        | 34.3                        | -                  |                   |
| Mission Valley<br>Reservoirs             | Mission Valley<br>(Flathead River) ** | 105.0              | 14.1                        | 24.1                        | -                  |                   |

\* Comprise two reservoirs on Dry Creek

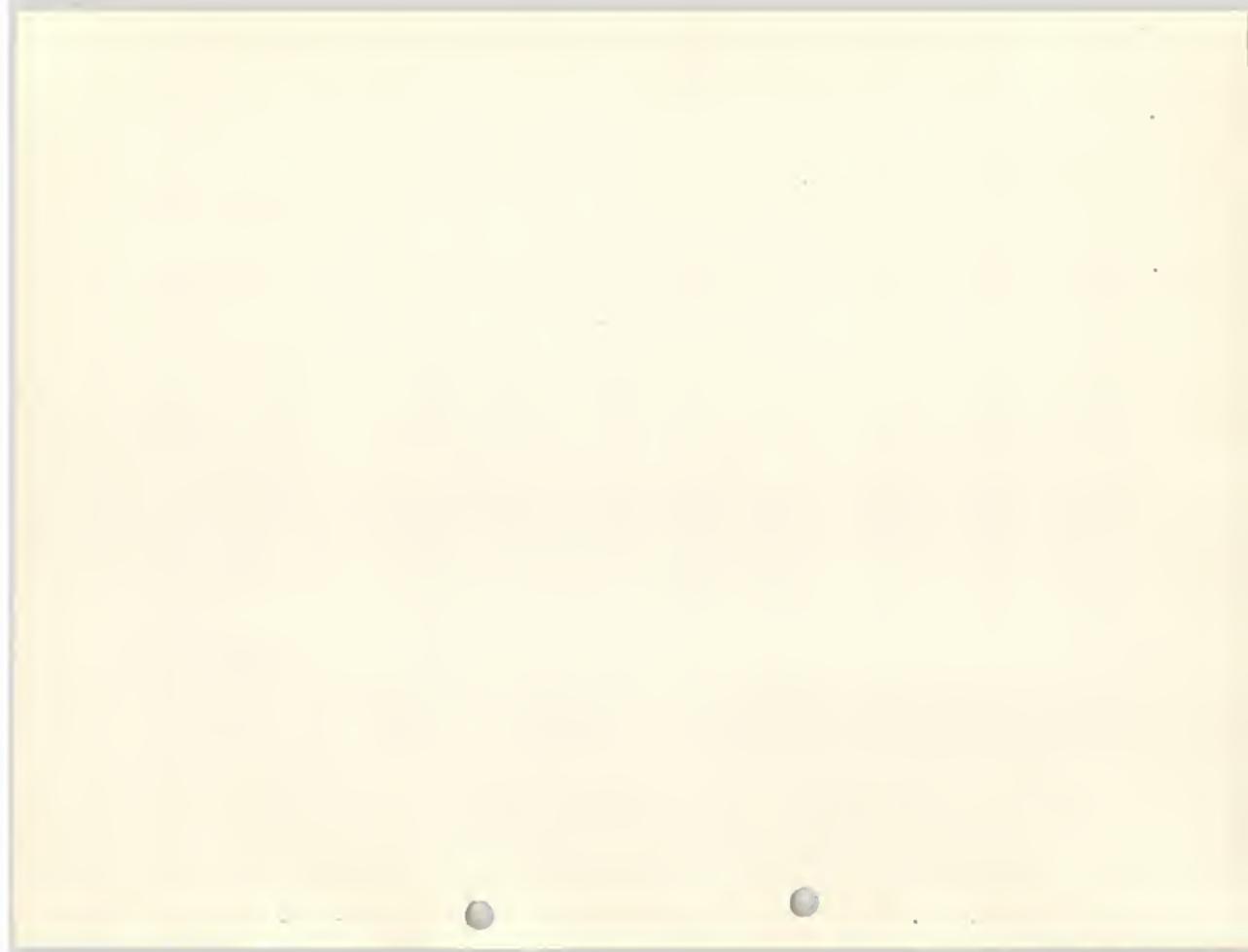
\* Comprise two reservoirs on Little Bitterroot River

\*\*Comprise nine small reservoirs on Mission Valley Project Indian Reclamation Service



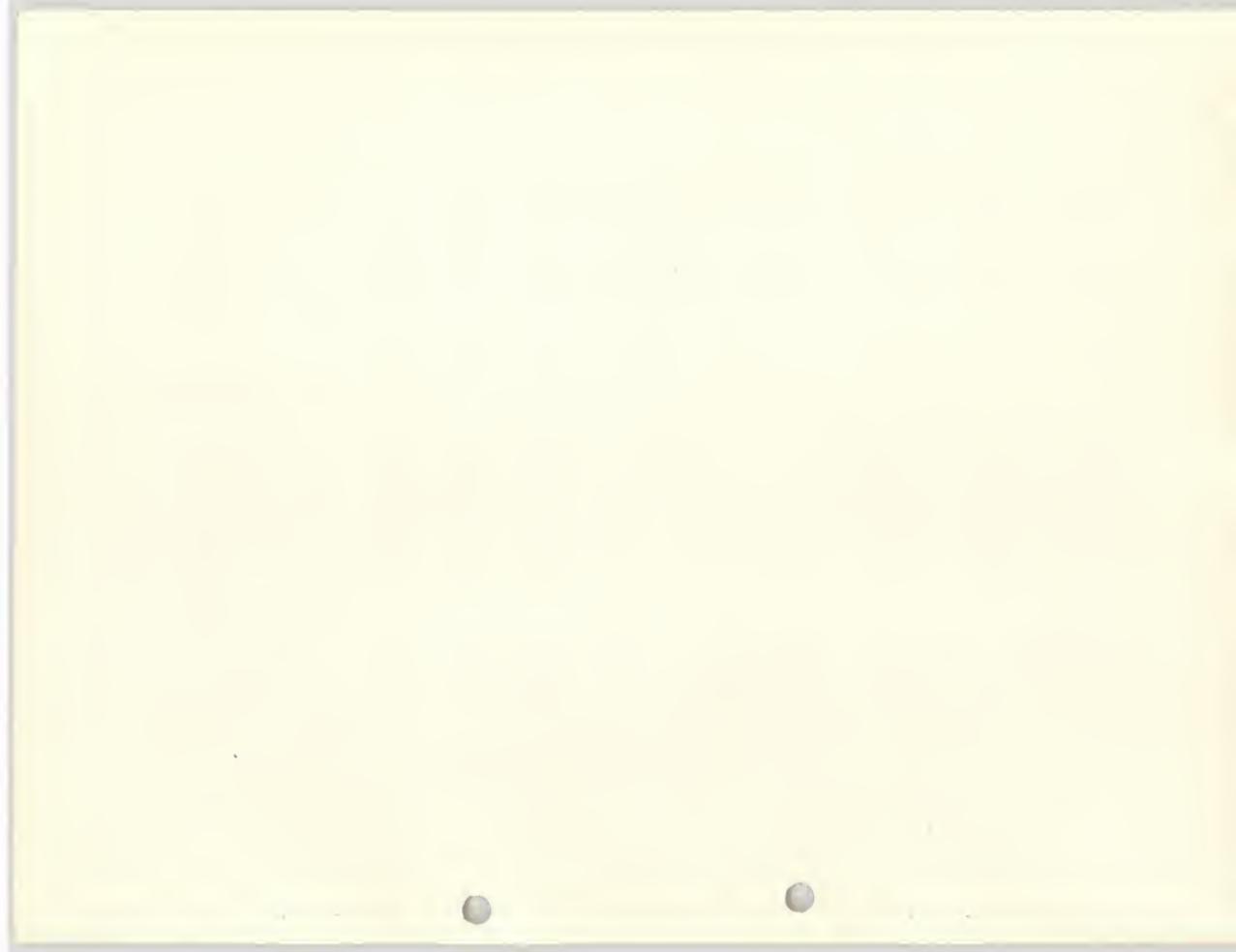
PRECIPITATION DATA FOR FEBRUARY 1, 1951  
MONTANA

| Station                 | Elev-<br>ation | 1950 |       |      | 1951 |                      |         | Accumulated Precipitation |           |  |
|-------------------------|----------------|------|-------|------|------|----------------------|---------|---------------------------|-----------|--|
|                         |                | Oct. | Nov.  | Dec. | Jan. | Dept. From<br>Normal | 1950-51 | Normal                    | Departure |  |
| <u>WEST OF DIVIDE</u>   |                |      |       |      |      |                      |         |                           |           |  |
| Butte (Airport)         | 5533           | 0.53 | 1.20  | 0.59 | 0.92 | +0.52                | 3.24    | 2.05                      | +1.19     |  |
| Phillipsburg            | 5280           | 0.51 | 1.25  | 0.64 | 1.13 | +0.64                | 3.83    | 3.28                      | +0.55     |  |
| Hamilton                | 3529           | 1.78 | 1.58  | 0.71 | 1.21 | +0.42                | 5.28    | 3.22                      | +2.06     |  |
| West Glacier            | 3154           | 5.87 | 2.35  | 5.17 | 4.77 | +1.84                | 18.16   | 11.32                     | +6.84     |  |
| Summit (Marias)         | 5213           | 7.53 | 6.13  | 5.88 | 5.37 | +1.95                | 21.91   | 11.69                     | +13.22    |  |
| Ovando 1 SW             | 4101           | 1.02 | 2.38  | 1.63 | 1.53 | -0.07                | 6.56    | 6.10                      | +0.16     |  |
| Trout Creek             | 2185           | 6.36 | 3.95  | 4.67 | 5.42 | +1.73                | 20.40   | 13.87                     | +6.53     |  |
| Thompson Falls          | 2135           | 4.36 | 2.79  | 2.25 | 2.97 | +0.96                | 12.37   | 8.25                      | +4.12     |  |
| Average (8)             |                | 3.50 | 2.70  | 2.69 | 2.95 |                      | 11.84   | 7.47                      | +4.37     |  |
| <u>CENTRAL DIVISION</u> |                |      |       |      |      |                      |         |                           |           |  |
| Babb                    | 4300           | 1.04 | 1.23  | 0.85 | 0.65 | -0.29                | 3.77    | 4.05                      | -0.28     |  |
| Havre                   | 2188           | 0.24 | 0.41  | 0.32 | 0.39 | -0.34                | 1.36    | 2.62                      | -1.26     |  |
| Great Falls (Airport)   | 3664           | 0.03 | 1.19  | 0.58 | 0.11 | -0.20                | 2.21    | 2.80                      | -0.59     |  |
| Helena (Airport)        | 3893           | 0.43 | 1.50  | 0.61 | 0.38 | -0.18                | 2.91    | 2.09                      | +0.82     |  |
| Lewistown (Airport)     | 4132           | 0.74 | 0.83  | 1.05 | 0.17 | -0.56                | 2.79    | 1.50                      | +1.29     |  |
| Livingston              | 4485           | 0.94 | 1.05  | 0.81 | 0.38 | -0.16                | 3.18    | 3.11                      | +0.07     |  |
| Wisdom                  | 6058           | 1.06 | 1.15  | 0.48 | 0.71 | +0.09                | 3.40    | 3.22                      | +0.18     |  |
| West Yellowstone        | 6669           | 2.88 | 1.79  | 1.95 | 2.28 | -0.53                | 8.90    | 8.04                      | +0.86     |  |
| Mystic Lake             | 6558           | 0.86 | 2.37  | 1.08 | 2.02 | +0.88                | 6.33    | 5.60                      | +0.73     |  |
| Average (9)             |                | 0.91 | 1.28  | 0.85 | 0.82 |                      | 3.87    | 3.67                      | +0.20     |  |
| <u>EASTERN DIVISION</u> |                |      |       |      |      |                      |         |                           |           |  |
| Malta                   | 2255           | 0.39 | 0.18  | 0.35 | 0.49 | +0.02                | 1.41    | 2.04                      | -0.63     |  |
| Ft. Peck                | 2180           | 0.24 | 0.25  | 0.23 | 0.18 | +0.10                | 1.20    | 1.88                      | -0.68     |  |
| Medicine Lake           | 1962           | 0.50 | 0.10  | 0.21 | 0.36 | +0.05                | 1.17    | 1.67                      | -0.50     |  |
| Circle                  | 2128           | 0.54 | 0.18  | 0.13 | 0.33 | -0.34                | 1.18    | 2.84                      | -1.66     |  |
| Billings #2             | 3139           | 0.83 | 0.88  | 0.68 | 0.70 | +0.07                | 3.09    | 3.18                      | -0.09     |  |
| Miles City              | 2392           | 0.10 | 0.52  | 0.31 | 0.08 | -0.58                | 1.31    | 2.76                      | -1.45     |  |
| Glendive                | 2076           | 0.15 | E0.16 | 0.07 | 0.37 | -0.15                | 1.05    | 2.32                      | -1.27     |  |
| Broadus                 | 3026           | 0.46 | 0.11  | 0.10 | 0.18 | -0.02                | 1.75    | 2.63                      | -0.88     |  |
| Average (8)             |                | 0.48 | 0.34  | 0.30 | 0.41 |                      | 1.52    | 2.42                      | -0.90     |  |



PRECIPITATION DATA FOR FEBRUARY 1, 1951  
NORTHERN WYOMING

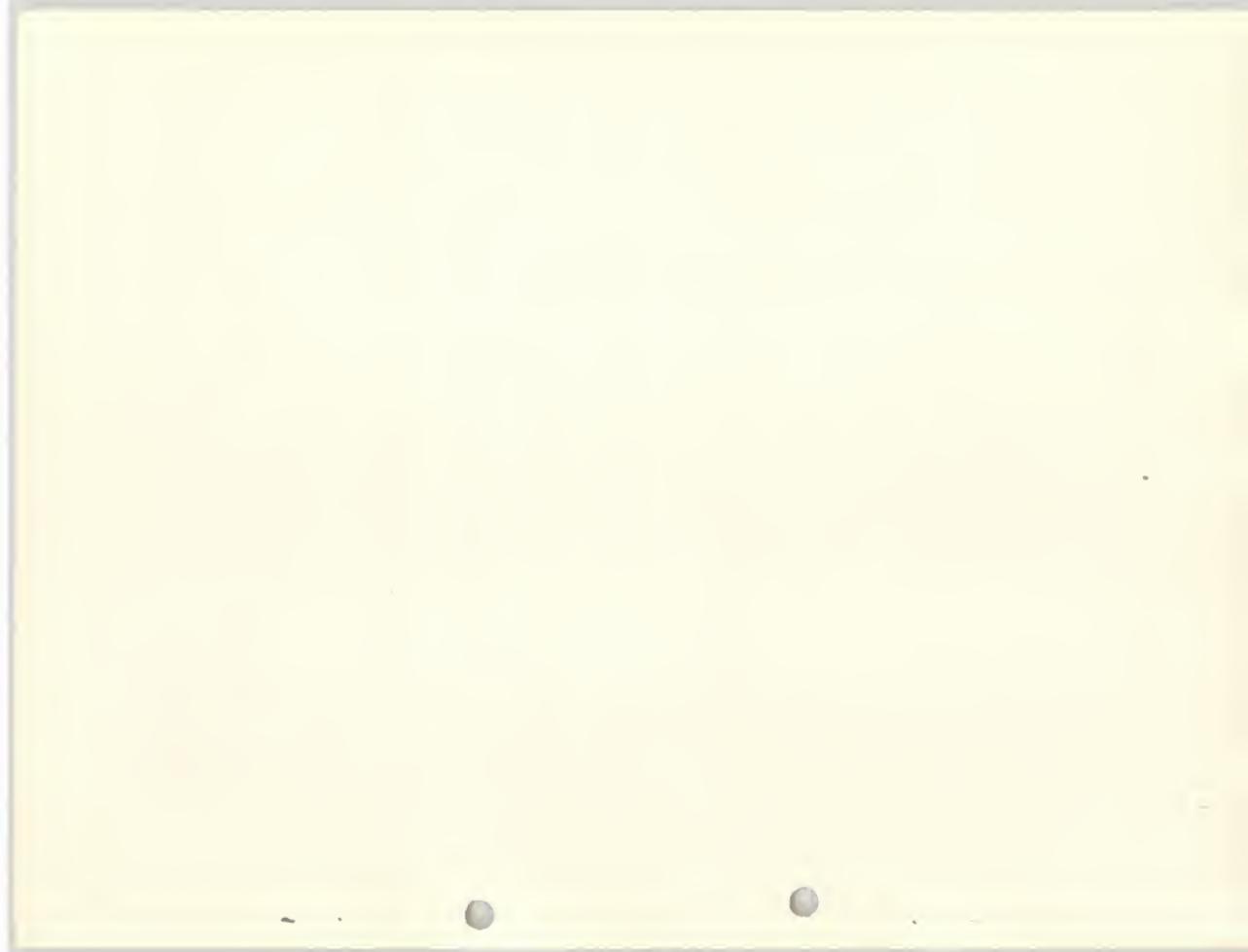
| Station                     | Elev-<br>ation | 1950          |      |      | 1951    |            | Accumulated Precipitation |        |           |
|-----------------------------|----------------|---------------|------|------|---------|------------|---------------------------|--------|-----------|
|                             |                | Precipitation |      |      | Jan.    | Dept. From | 1950-51                   | Normal | Departure |
|                             |                | Oct.          | Nov. | Dec. |         | Normal     |                           |        |           |
| <b>BIG HORN RIVER BASIN</b> |                |               |      |      |         |            |                           |        |           |
| Cody                        | 4984           | .08           | 1.19 | .28  | .77     | +.50       | 2.33                      | 1.81   | +0.52     |
| Lovell                      | 3825           | .02           | .32  | .03  | .09     | -.33       | 0.46                      | 1.57   | -1.11     |
| Worland                     | 4061           | T             | .10  | .40  | T       | -.35       | 0.50                      | 1.67   | -1.17     |
| Sunshine 4 SW               | 6930           | .17           | 1.04 | .29  | .37     | -.17       | 1.87                      | 3.35   | -1.48     |
| Thermopolis                 | 4336           | .19           | .80  | .21  | .07     | -.32       | 1.27                      | 3.54   | -2.27     |
| Riverton                    | 4954           | .22           | .57  | .00  | .05     | -.12       | 0.84                      | 2.01   | -1.17     |
| Dubois                      | 6917           | .37           | .71  | T    | .16     | -.31       | 1.21                      | 2.00   | -0.79     |
| Average                     |                | .15           | .68  | .17  | .22     |            | 1.22                      | 2.13   | -0.91     |
| <b>TONGUE RIVER BASIN</b>   |                |               |      |      |         |            |                           |        |           |
| Sheridan                    | 4021           | .51           | 1.05 | .58  | .55     | -.30       | 2.69                      | 3.19   | -0.50     |
| <b>POWDER RIVER BASIN</b>   |                |               |      |      |         |            |                           |        |           |
| Arvada                      | 3680           | .22           | .31  | .06  | .16     | -.29       | 0.75                      | 2.43   | -1.68     |
| Metz Ranch                  | 5280           | .37           | .67  | .19  | .46     | -.02       | 1.69                      | 2.20   | -0.51     |
| Gillette                    | 4542           | .63           | .72  | .05  | .50     | -.18       | 1.90                      | 2.99   | -1.09     |
| Nine Mile Creek             | 5000           | .70           | .40  | .05  | Missing | -          | -                         | -      | -         |
| Mid West                    | 4850           | .83           | .47  | .28  | .23     | -.31       | 1.81                      | 2.83   | -1.02     |
| Average                     |                | .55           | .51  | .13  | .34     |            | 1.54                      | 2.59   | -1.05     |



## MONTANA SNOW SURVEYS FEBRUARY 1, 1951

## COLUMBIA RIVER BASIN

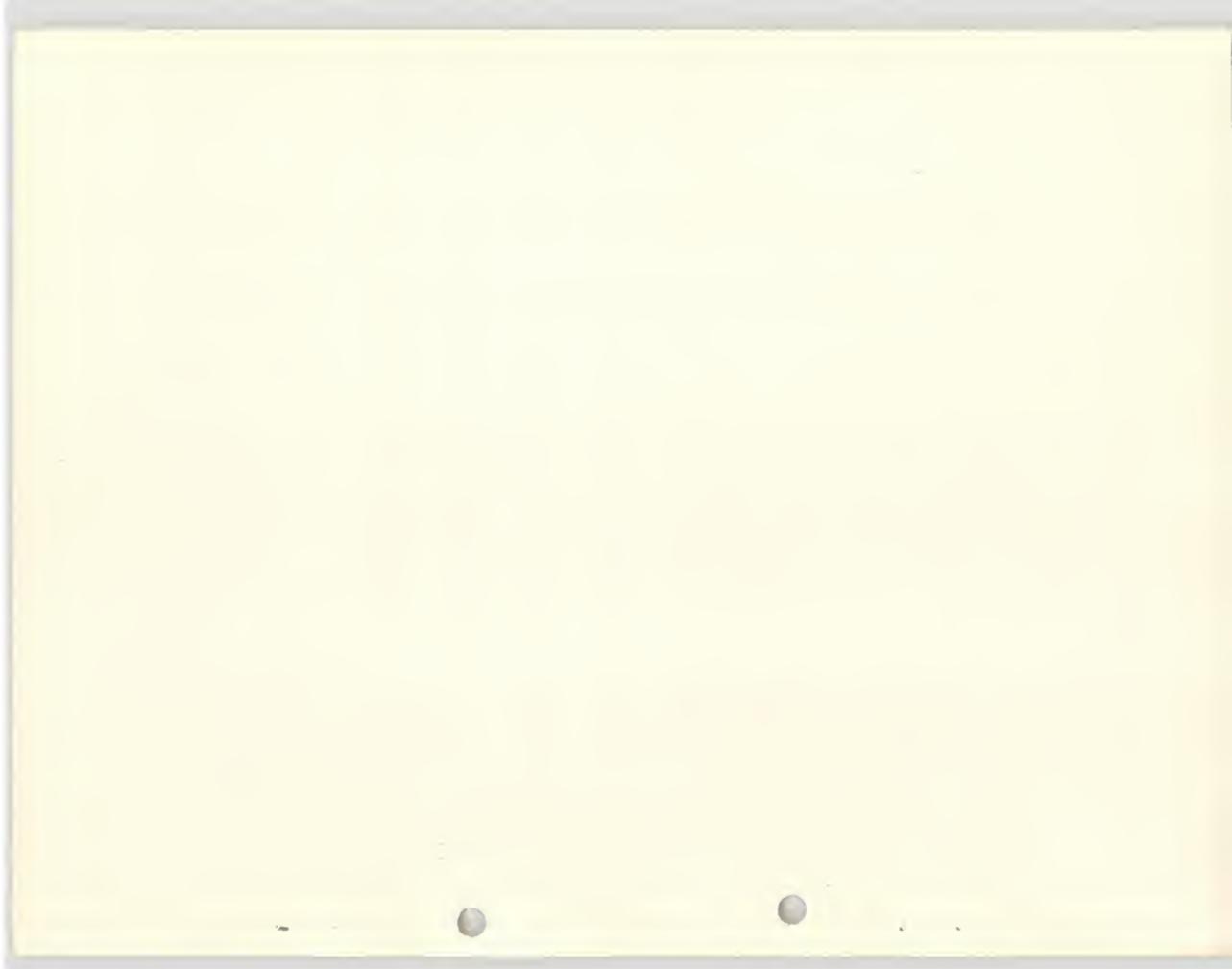
| DRAINAGE BASIN<br>AND<br>SNOW COURSE | No.    | Elev. | Date<br>of<br>Survey<br>1951 | Snow<br>Depth<br>(In.) | Feb. 1<br>1951 | Water Content (Inches) |      |                            |        | Years<br>of<br>Record | Ground<br>Surface<br>Condition |
|--------------------------------------|--------|-------|------------------------------|------------------------|----------------|------------------------|------|----------------------------|--------|-----------------------|--------------------------------|
|                                      |        |       |                              |                        |                | Past Records           |      | Average Data<br>February 1 | % Avg. |                       |                                |
|                                      |        |       |                              |                        |                | 1950                   | 1949 | Avg.                       | % Avg. |                       |                                |
| <b>FLATHEAD RIVER</b>                |        |       |                              |                        |                |                        |      |                            |        |                       |                                |
| Desert Mountain                      | 13A2   | 5600  | Jan. 31                      | 43.5                   | 11.9           | 13.7                   | 9.8  | 9.4                        | 127    | 5                     | G.N.F.                         |
| Marias Pass                          | 13A5   | 5250  | Feb. 1                       | 44.6                   | 13.7           | 20.6                   | 12.6 | 11.1                       | 123    | 17                    | --                             |
| Snow Lab. #16                        | 13A9   | 5200  | Jan. 23                      | 46.0                   | 13.1           | 21.2                   | 13.4 | 15.8                       | 83     | 5                     | --                             |
| Trout Lake #2                        | 13A12  | 3600  |                              |                        |                |                        |      |                            |        |                       |                                |
| <b>UPPER CLARK FORK</b>              |        |       |                              |                        |                |                        |      |                            |        |                       |                                |
| Chessman Res.                        | 12C5   | 6200  | Feb. 7                       | 12.8                   | 3.1            | 3.4                    | 4.4  | 3.1                        | 100    | 16                    | --                             |
| Pipestone Pass                       | 12D1   | 7200  | Feb. 3                       | 19.6                   | 3.0            | 1.4                    | 5.2  | 2.9                        | 103    | 12                    | G.F.                           |
| Tenmile, Lower                       | 12C2   | 6250  | Feb. 5                       | 23.1                   | 5.5            | 4.6                    | 6.3  | 4.5                        | 122    | 16                    | --                             |
| Tenmile, Middle                      | 12C3   | 6800  | Feb. 6                       | 31.4                   | 8.2            | 6.9                    | 8.7  | 6.3                        | 130    | 17                    | --                             |
| Tenmile, Upper                       | 12C4   | 8000  | Feb. 6                       | 36.3                   | 10.0           | 8.4                    | 10.6 | 8.0                        | 125    | 17                    | --                             |
| Lookout                              | 15B2   | 5250  | Feb. 2                       | 95.0                   | 27.3           | 30.9                   | 26.2 | 21.0                       | 130    | 15                    | --                             |
| <b>BITTERROOT</b>                    |        |       |                              |                        |                |                        |      |                            |        |                       |                                |
| Gibbons Pass                         | 13D2   | 7100  | Jan. 31                      | 55.8                   | 16.9           | 17.2                   | -    | 14.0                       | 120    | 11                    | G.N.F.                         |
| Nezperce Camp                        | 14D2   | 5580  | Feb. 1                       | 37.2                   | 6.4            | 8.6                    | 13.8 | 8.6                        | 98     | 14                    | G.N.F.                         |
| Nezperce Pass                        | 14D1   | 6575  | Jan. 31                      | 43.5                   | 11.3           | 9.6                    | 16.3 | 11.1                       | 102    | 14                    | G.N.F.                         |
| <b>FLATHEAD RIVER</b>                |        |       |                              |                        |                |                        |      |                            |        |                       |                                |
| Basin Creek                          | 13B14  | 5000  | Jan. 29                      | 26.5                   | 7.4            | New Course             |      |                            |        | 1                     | G.N.F.                         |
| Holbrook                             | 13B13  | 4530  | Jan. 29                      | 26.8                   | 6.4            | New Course             |      |                            |        | 1                     | G.N.F.                         |
| Quintonkon                           | 13A13  | 3800  |                              |                        |                |                        |      |                            |        |                       |                                |
| Twin Creeks                          | 13B11  | 3560  |                              |                        |                |                        |      |                            |        |                       |                                |
| <b>KOOTENAI</b>                      |        |       |                              |                        |                |                        |      |                            |        |                       |                                |
| Fernie                               | Canada | 3500  | Feb. 5                       | 32.3                   | 7.6            | 11.7                   | 6.8  | 5.9                        | 129    | 12                    | --                             |
| New Fernie                           | Canada |       | Feb. 6                       | 42.6                   | 10.4           | -                      | -    | -                          |        | 1                     | --                             |
| Gray Creek                           | Canada | 5100  | Jan. 29                      | 52.1                   | 13.5           | 12.5                   | 12.1 | 12.7                       | 108    | 3                     | --                             |
| Marble Canyon                        | Canada | 5000  | Jan. 31                      | 64.7                   | 19.9           | 12.9                   | 7.9  | 12.2                       | 163    | 4                     | --                             |
| Sinclair Pass                        | Canada | 4500  | Jan. 30                      | 26.6                   | 5.1            | 5.2                    | 3.2  | 4.7                        | 109    | 4                     | --                             |



## MONTANA SNOW SURVEYS FEBRUARY 1, 1951

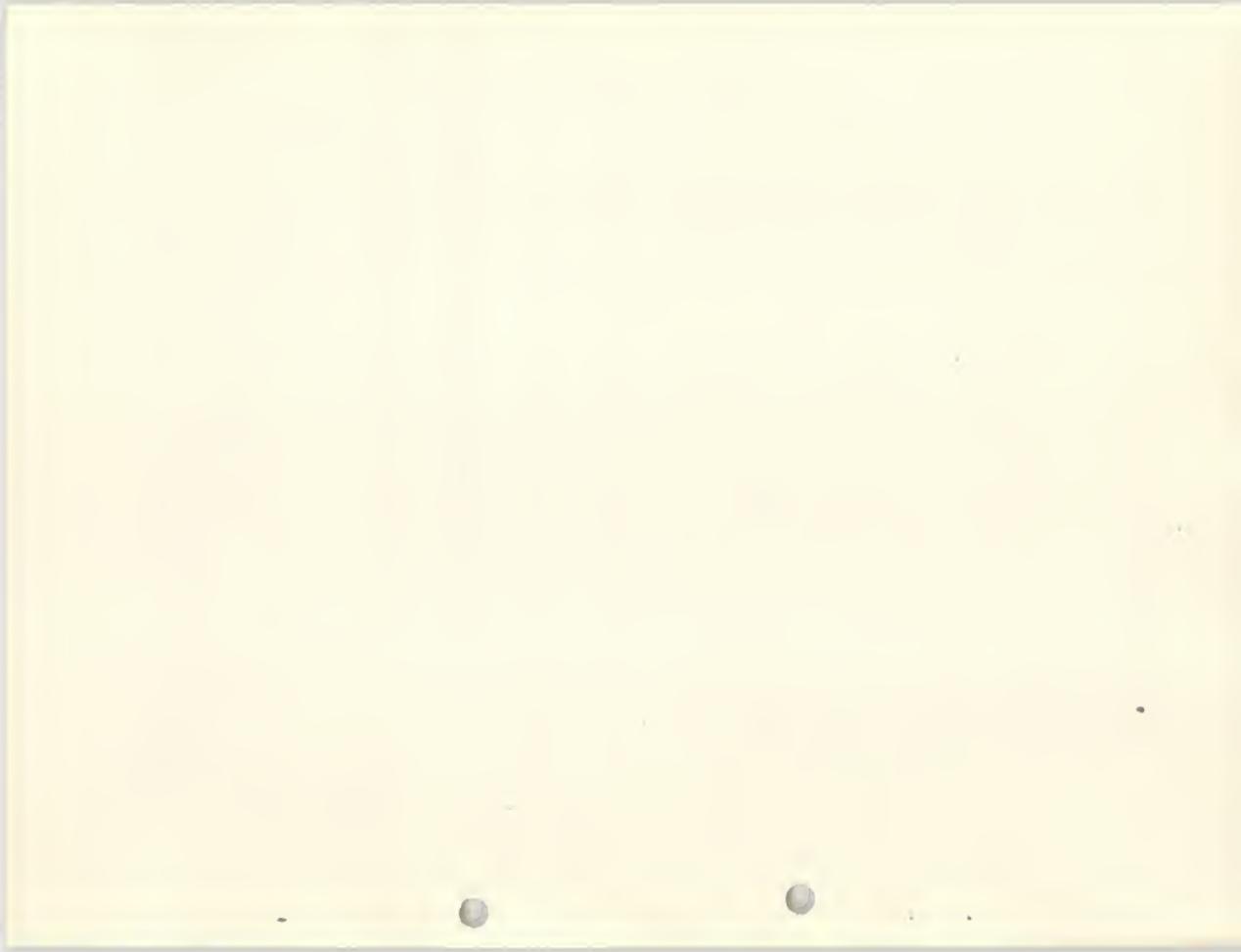
## MISSOURI BASIN

| DRAINAGE BASIN<br>AND<br>SNOW COURSE | No.   | Elev. | Date<br>of<br>Survey<br>1951 | Snow<br>Depth<br>(In.)<br>1951 | Water Content (Inches) |                            |      |      | Years<br>of<br>Record | Ground<br>Surface<br>Condition |  |
|--------------------------------------|-------|-------|------------------------------|--------------------------------|------------------------|----------------------------|------|------|-----------------------|--------------------------------|--|
|                                      |       |       |                              |                                | Feb. 1<br>1951         | Average Data<br>February 1 |      |      |                       |                                |  |
|                                      |       |       |                              |                                |                        | Past Records<br>1950       | 1949 | Avg. | %Ave.                 |                                |  |
| <b>MADISON RIVER</b>                 |       |       |                              |                                |                        |                            |      |      |                       |                                |  |
| Hebgen                               | 11E5  | 6550  | Jan. 31                      | 23.4                           | 5.4                    | 7.7                        | 11.1 | 8.2  | 66                    | 17                             |  |
| West Yellowstone                     | 11E7  | 6700  | Feb. 1                       | 30.2                           | 8.0                    | 9.9                        | 9.7  | 7.3  | 110                   | 14                             |  |
| 21-Mile                              | 11E6  | 7150  | Feb. 1                       | 36.1                           | 10.6                   | 11.5                       | 11.2 | 10.4 | 102                   | 14                             |  |
| Big Springs                          | 11E9  | 6500  | Jan. 31                      | 45.0                           | 13.0                   | 14.9                       | 15.1 | 12.0 | 109                   | 16                             |  |
| Island Park                          | 11E10 | 3600  | Feb. 1                       | 35.0                           | 9.1                    | 12.8                       | 11.6 | 9.5  | 94                    | 16                             |  |
| Valley View                          | 11E8  | 6500  | Feb. 1                       | 31.0                           | 7.4                    | 12.0                       | 10.0 | 8.9  | 83                    | 6                              |  |
| Norris Basin                         | 10E2  | 7500  | Feb. 1                       | 25.6                           | 6.2                    | -                          | -    | -    | -                     | 1                              |  |
| <b>GALLATIN RIVER</b>                |       |       |                              |                                |                        |                            |      |      |                       |                                |  |
| Mystic Lake                          | 10D2  | 6600  | Feb. 3                       | 20.7                           | 5.2                    | 2.8                        | 6.6  | 5.1  | 102                   | 15                             |  |
| New World                            | 10D1  | 6700  | Feb. 3                       | 23.7                           | 6.1                    | 3.2                        | 8.3  | 7.9  | 77                    | 4                              |  |
| 21-Mile                              | 11E6  | 7150  | Feb. 1                       | 36.1                           | 10.6                   | 14.5                       | 14.2 | 10.4 | 102                   | 14                             |  |
| <b>MISSOURI RIVER MAIN STEM</b>      |       |       |                              |                                |                        |                            |      |      |                       |                                |  |
| Chessman Reservoir                   | 12C5  | 6200  | Feb. 7                       | 12.8                           | 3.1                    | 3.4                        | 4.4  | 3.1  | 100                   | 16                             |  |
| Pipestone Pass                       | 12D1  | 7200  | Feb. 3                       | 19.6                           | 3.0                    | 1.4                        | 5.2  | 2.9  | 103                   | 12                             |  |
| Tenmile, Lower                       | 12C2  | 6250  | Feb. 5                       | 23.1                           | 5.5                    | 4.6                        | 6.3  | 4.5  | 122                   | 16                             |  |
| Tenmile, Middle                      | 12C3  | 6800  | Feb. 6                       | 31.4                           | 8.2                    | 6.9                        | 8.7  | 6.3  | 130                   | 17                             |  |
| Tenmile, Upper                       | 12C4  | 8000  | Feb. 6                       | 36.3                           | 10.0                   | 8.4                        | 10.6 | 8.0  | 125                   | 17                             |  |
| (Marias River)                       |       |       |                              |                                |                        |                            |      |      |                       |                                |  |
| Marias Pass                          | 12B5  | 5250  | Feb. 1                       | 44.6                           | 13.7                   | 20.6                       | 12.6 | 11.1 | 123                   | 17                             |  |
| Snow Lab. #16                        | 13A9  | 5200  | Jan. 23                      | 46.0                           | 13.1                   | 21.2                       | 13.4 | 15.8 | 83                    | 5                              |  |
| <b>UPPER YELLOWSTONE</b>             |       |       |                              |                                |                        |                            |      |      |                       |                                |  |
| Canyon                               | 10E3  | 7750  | Feb. 1                       | 37.6                           | 8.7                    | 11.6                       | 10.2 | 9.5  | 92                    | 6                              |  |
| Cooke City                           | 10D7  | 7100  | Feb. 1                       | 23.6                           | 5.2                    | 4.2                        | 6.7  | 5.5  | 95                    | 5                              |  |
| Lake Camp                            | 10E4  | 7850  | Feb. 1                       | 30.0                           | 6.7                    | 8.1                        | 8.4  | 5.7  | 118                   | 6                              |  |
| Lupine                               | 10E1  | 7300  | Feb. 3                       | 29.0                           | 6.4                    | 7.4                        | 8.6  | 5.9  | 108                   | 10                             |  |
| Lewis Lake Divide                    | 10E9  | 7000  | Feb. 2                       | 99.0                           | 32.3                   | 35.2                       | 39.8 | 30.7 | 105                   | 33                             |  |



MONTANA SNOW SURVEYS FEBRUARY 1, 1951

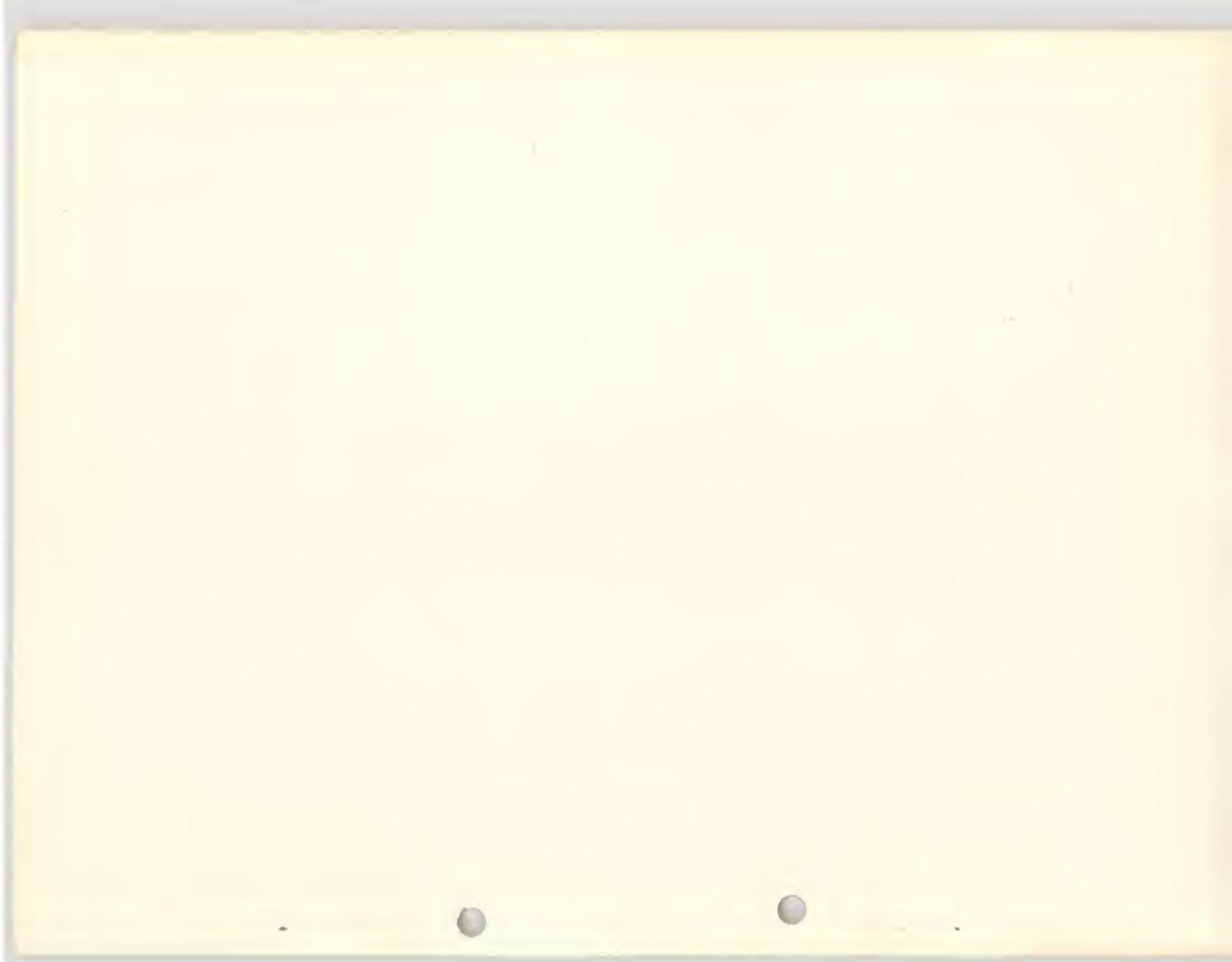
## MISSOURI BASIN IN WYOMING



## MONTANA SNOW SURVEYS FEBRUARY 1, 1951

## MISSOURI BASIN in WYOMING

| DRAINAGE BASIN<br>AND<br>SNOW COURSE     | No.    | Elev. | Date<br>of<br>Survey | Snow<br>Depth<br>(In.) | Water Content (Inches) |              |      | Average Data<br>February 1<br>Avg. | Years<br>of<br>Record | Ground<br>Surface<br>Condition |
|--|--------|-------|----------------------|------------------------|------------------------|--------------|------|------------------------------------|-----------------------|--------------------------------|
|  |        |       | 1951                 | 1951                   | Feb. 1<br>1951         | Past Records |      |                                    |                       |                                |
|  |        |       |                      |                        |                        | 1950         | 1949 |                                    |                       |                                |
| <b>SHOSHONE RIVER</b>                    |        |       |                      |                        |                        |              |      |                                    |                       |                                |
| East Entrance                            | 10E6   | 7000  | Jan. 31              | 37.3                   | 9.4                    | 8.6          | 10.7 | 9.6                                | 98                    | 3                              |
| Sylvan Pass                              | 10E5   | 7100  | Feb. 3               | 45.7                   | 11.4                   | 12.1         | 10.9 | 10.6                               | 107                   | 8                              |
| <b>TONGUE RIVER</b>                      |        |       |                      |                        |                        |              |      |                                    |                       |                                |
| Burgess R.S.                             | 7E1    | 7900  | Feb. 1               | 39.6                   | 11.3                   | --           | --   | --                                 | --                    | 1                              |
| Big Goose R.S.                           | 7E2    | 7700  | Feb. 1               | 13.8                   | 3.1                    | --           | --   | --                                 | --                    | 1                              |
| Dome Lake                                | 7E5    | 8800  |                      |                        |                        |              |      |                                    |                       | --                             |
| <b>POWDER RIVER</b>                      |        |       |                      |                        |                        |              |      |                                    |                       |                                |
| Muddy Pass                               | 7E7    | 9700  | Jan. 31              | 22.8                   | 4.8                    | -            | -    | -                                  | -                     | 1                              |
| Sour Dough                               | 6F1    | 8500  |                      |                        |                        |              |      |                                    |                       | G.F.                           |
| Soldier Park                             | 7E6    | 8700  | Feb. 1               | 17.8                   | 3.7                    | --           | --   | -                                  | -                     | 1                              |
| <b>CHEYENNE RIVER<br/>(South Dakota)</b> |        |       |                      |                        |                        |              |      |                                    |                       |                                |
| Upper Spearfish                          | 1 S.D. | 6500  | Jan. 30              | 13.9                   | 2.6                    |              |      |                                    |                       |                                |
| Upper Castle                             | 2 S.D. | 6800  | Jan. 30              | 17.2                   | 2.2                    |              |      |                                    |                       |                                |
| Deerfield                                | 3 S.D. | 6000  | Jan. 30              | 3.3                    | 0.9                    |              |      |                                    |                       |                                |





Federal - State - Private  
COOPERATIVE SNOW SURVEYS

—  
Furnishes the basic data  
necessary for forecasting  
water supply for irrigation,  
domestic and municipal water  
supply, hydro-electric power  
generation, navigation,  
mining and industry

—

"WATER IS THE WEST'S GREATEST RESOURCE"